Overseas Medical Student Electives: a Precursor for Global Health Action?

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Abstract

Aims. i) To identify the key learning outcomes for medical student elective experiences in a Low-Middle Income Country (LMIC) compared to a High Income Country (HIC) and ii) To provide students and medical curriculum planners with insights to guide future preparation for overseas electives and to promote learning in global health

Methods. A sample of 20 LMIC and 20 HIC elective reports were randomly selected from a total sample of 271. A general inductive approach was used to analyse the data and to identify emerging themes consistent with the study aims.

Results Both groups gained from their experiences in terms of exposure to alternative practice, culture and language. Students who visited LMIC were witness to the realities of practicing medicine in resource constrained environments; 80% of students reported on the impact of scarce resources on medical practice and the importance of wider social and cultural determinants on health. Alternatively, students who visited HIC reported exposure to technologically advanced clinical practice, which was both a motivator and an outcome of their experience.

Conclusion. Both LMIC and HIC elective students gained substantial experience from this episode in their medical training. The motivations and expectations that underpinned the decision of what country to visit was seldom disappointing and reflect a significant cross-roads in the future of medicine; the need to be prudent with resources and focus on global health equity, and the reality of a burgeoning advanced biotechnology era within medicine. Both of these experiences are necessary to gain an understanding of global health.

Keywords

Medical; Overseas; Global Health; Training

Introduction

Training competent, resourceful, globally active medical graduates is a primary objective for most medical and health training institutions (Aldrich 2011). The driver for this goal has come from both a pedagogical impetus and a consumer demand. It has been well documented that medical graduates should be being prepared for a radically different world compared with their predecessors and that these changes should be embedded in early medical training years. The evolution of the medical training programme will involve fundamental curricular changes, such as a shift from predominantly disease pathology treated in hospital settings towards a broader conceptualisation of health. The introduction of global health is one such change for the New Zealand medical training curricular and is eagerly expected by medical students. Koplan and colleagues define global health as "the study and practice of improving health care for all people worldwide"(Koplan, Bond et al. 2009). Other authors prioritise the improvement of health in low and middle income countries or at least take a trans-boundary approach to health (McFarlane, M et al. 2008; Beaglehole and Bonita 2010). In the context of this study, global health refers to health of populations in low and middle income countries and reflects the macro determinants of health affected by poverty, politics and place.

The global burden of disease and disability reflect the changes to primary global drivers – changes in lifestyles, increasing inequities between economic strata and transmission routes for infectious diseases. Many now argue that medical graduates should be prepared for practice in environments that reflect greater economic disparities (Margolis, Deckelbaum et al. 2002; Fox, Thompson et al. 2007). The implications of relentless population migration, our ageing populations and the radically changing lifestyle, present unique challenges for medicine in our modern society. Fox suggests that students who are exposed to

the dynamics of global health through elective programmes or during core curricular are better equipped for the health care in the twenty first century (Fox, Thompson et al. 2007).

Globally, the demand for student placements in LMIC has been increasing. According to a UK study, over 40% of students have been on an "overseas medical mission as part of their training" (Dowell and Merrylees 2009). Martiniuk and colleagues reviewed publications arising from medical missions over the past 25 years. Based on their analysis they argue for improvements in medical mission planning, monitoring and evaluation at the very basic level (Martiniuk, Manouchehrain et al. 2012). Crump and Sugarman (Crump and Sugarman 2008) also discuss the standard procedure in medical training institutions to offer an elective for students to practice in a country outside of their training base. Medical training institutions are increasing aware of the need to provide a "hands-on" experience for their students in settings outside of their own. For those interested in promoting equiTABLE access to health, a medical elective in LMIC offers one opportunity for students to engage in the upstream and poverty related determinants of disease and disability (Shah and Wu 2008).

Aside from the medical elective period, few other training opportunities prepare medical students to respond to the challenges of practicing medicine in diverse or resource poor contexts (Bateman, Baker et al. 2001). Singh argues that students now enrol in medical programme with greater appreciation of international affairs but these experiences "cannot compete with the reality of dealing with health issues in resource poor settings, or anticipating the reach of "international" problems in a local context" (Singh 2011). Conversely, others have argued that, in isolation, international medical electives do little to address the underlying causes of global inequalities, and are far more beneficial for the student than the recipient community (Singh 2011; Singh, McCool et al. 2012).

Method

Study design

A qualitative (inductive, thematic) analysis of student medical elective reports in the years 2007, 2008 and 2009 was conducted.

These reports are completed by all University of Auckland medical students in their last year of medical training who have completed their medical elective. The reports are a compulsory component of the medical elective programme and are completed within two weeks of return to New Zealand. Reports shorter than 10 pages, are not subjected to pre-determined headings but are expected to present a detailed account of the elective experience, including highlights and challenges.

Sample selection

All student reports from 2007 to 2009 were retrieved from an on-line depository belonging to the University of Auckland library. Elective reports were divided into higher income countries and upper middle, lower middle and low-income countries, according to the World Bank listing (Bank 2013). The World Bank listings are a measure of economic status based on gross national income.

All selected reports were then downloaded in PDF file format from the university library website and saved (as PDF files) for the inductive, thematic analysis.

In total of 156 reports from low, lower middle and upper middle countries and 115 reports in high-income countries were downloaded from the repository. Reports were then sorted according to visited country (LMIC and HIC). New Zealand elective reports were excluded because the aim of the study was to investigate the experience of medical students who experienced their electives overseas. Reports were systematically selected from each group (i.e. every fifth report was selected, unless the country had already been selected for the second time. This process was undertaken to maximise diversity of countries in each group.

In total, twenty reports from each group (LMIC and HIC) were selected for analysis. The sample size was considered sufficient to reach data saturation necessary for thematic analysis.

Data analysis

A general inductive thematic analysis was undertaken for each of the reports. As the reports were prepared as part of student elective assessment, and not specifically for research purposes, we did not use or refer to a pre-defined set of questions for data collection or analysis. This process involved a thorough reading and comprehension of each report (starting with the LMIC and then the HIC), to establish a primary set of descriptive categories within the textual data. After several iterations of this process the

coding framework was refined as a set of five key theme that with a maximum of accuracy reflected the dominant themes emerged in the reports just as agreed by RC and JM The results of our analysis are presented and latterly discussed according to these dominant themes: motivation for (choice of) country; expectations (of elective); experiences and challenges and new insights.

Results

In total, 40 reports were selected and analysed; 20 from LMIC and 20 from HIC. Reports in 2007, 2008 and 2009 were combined and 20 from each (LMIC and HIC) group were selected. TABLE 1 shows the proportion of reports (overall) for each group in the three years. Over the three years reviewed, the proportion of students visiting LMIC has remained higher than that for HIC.

TABLE 1. DISTRIBUTION OF STUDENT REPORTS FOR 2007-2009

	LMIC	HIC	Total
2007 n (%)	46 (45.1%)	37 (36.3%)	83
2008 n (%)	46 (39%)	44 (37.3%)	90
2009 n (%)	64 (53.3%)	34 (28.3%)	98

Motivation/Choice of the elective

Family connections were the primary motivation for choice of elective country for most students. For many students returning to their country of birth offered the added benefits of being able to reconnect with family while making decision on the elective (LIMC, Malaysia). For other students, a desire to experience "grassroots medicine" (LMIC, Pacific); to practice medicine in a "developing country" or "environment constrained by limited resources" was the primary driver (LMIC, Cook Islands).

"[I was] interested in practicing medicine in an environment constrained by limited resources; I wanted to experience 'tropical' or 'island' medicine – not taught in medical curriculum" (LMIC, Pacific)

The challenge and learning that accompanies making decisions in the midst of clinical ambiguity was also noted by several students who visited LMICs.

Whereas others felt a pull towards an experience that would challenge them on a personal and clinical level, an ideal for those interested in adventure-based travel.

As a New Zealander [I] feel a connection to Edmund Hillary, or reading on adventures in the Himalayas, or my love of mountain running or my desire to see and feel the poverty. (LMIC, Nepal).

The abundance of acute orthopaedics injuries and the opportunity to be so close to the ski field's majority of our world live in. (HIC, Canada).

Decisions to visit a HIC were made on the basis of expectations of gaining clinical learning experience within a secure and safe experience. One student specifically wanted to avoid the "third world country" experience where she "was not able to communicate effectively", "frustrated" at the "lack of healthcare resources" and "little teaching," leading her to want "less of these limitations." Among both groups, students were motivated by expectations of enhanced clinical specialty department were an attempt to "plug some experience gaps", even if this was outside of the student level of previous experience.

[I wanted] to experience healthcare in a different setting, improve my clinical knowledge and improve my surgical skills. These objectives were easily obtained as daily I was rostered on as an assistant for surgeries (HIC, Croatia).

[I would] get involved as much as she [supervisor] would allow… she was pro students and pro teaching … she lets you get all hands in. (LMIC, Cook Islands).

Expectations: competency and comparability

Almost all students reported an aim to "improve their competency" in medical practice as one of their elective goals. Specifically, students set explicit goals relating to competency in areas such as taking medical histories, procedural skills, interpretation of investigation skills, formulating differential diagnoses, developing clinical management plans and assistance in surgical procedures. Exposure to advanced or alternative clinical exposure were frequently reported within the HIC country group – an expectation that was largely fulfilled. For several students gaining competency in a new language or strengthening a second language was anticipated, but not necessarily realised. Cultural competency was also noted, although again, this was a stronger motivation and outcome of a visit to LMICs.

In contrast, the LMIC group goals which were more likely to be related to understanding socio-economic determinants of health and medical practice in a

resource poor setting were frequently mentioned. Another recurring goal reported by students who visited LMIC, being able to "make appropriate decisions in complex or ambiguous situations with incomplete knowledge." This was different to HIC group where only one person (HIC, Canada) mentioned this specific goal.

Experience: clinical versus contextual

The HIC experience was characterised by a perceived need for diversity in clinical experiences. One student explained the benefit of attending consultation sessions where he was clearly impressed by the "very methodical... history taking and examinations". Such experiences, where they felt they were being 'extended' were highly rated by students; it was as if there was a direct line of learning from observation to future medical competency.

On the other hand, in LMIC group, students experienced events in which they felt powerless to control and they could do little but just absorb (conceptually) what they observed. For one student, the stark reality of the impact of poverty on everyday life, and death, was overwhelming.

[It was] difficult to see this poor family struggle to gather enough funds to be able to afford the daily medications. (LMIC, India)

[I] saw more deaths than during entire two years in clinical attachments [in New Zealand]. (LMIC, India)

In the above quotes, the relevance of this learning to the New Zealand context is acknowledged, but as a distinction rather than a connection. Indeed, poverty remains a primary determinant of poor health in New Zealand and therefore the insights gained from experience in a LMIC are significant and relevant to practice in New Zealand. In other words, experiences obtained from LMIC group may not be as tangible as medically focused experiences and skills that HIC students acquired.

Sixteen LMIC group students (80%) reported occasions where they felt poor quality of medical practice were being carried out in the hospitals usually due to "scarcity of resources" and several noticed that "lack of resources prevented optimal management."

Patients taking their turn on the bed to get some rest, while the other patient sat on a mat on the floor…the facilities were stretched to the limit…some patient's not receiving care until the last possible moment (LMIC, Vietnam)

In other cases, working in resource poor settings, where there was a scarcity of medical supplies, was often interpreted as symbolic of "poor quality medical practice". In one example, a student was required to administer medicine with no proven efficacy; where multiple patients being seen during a single visit and bed sharing was standard practice, due to a shortage of beds, was regarded as inadequate health care.

Rare or unusual cases such as paraquat poisoning or a assisting in award for wounded soldiers were highly valuable. Other observations that provide acute insight into the meshing of cultural practice and medicine included the surgeon who would pray before picking up the knife, to ward rounds conducted without discussion or where interns are routinely expected to brew tea for the seniors.

[There was] invaluable experience …not common in NZ …surgical wards were full of soldiers wounded on the battlefront... devastating injuries. (LMIC, Sri Lanka)

[I had] the opportunity to examine patients with Tuberculosis… (LMIC, India)

> Indeed, practical, hands-on experience was highly prized by students in both the LMIC and HIC groups. These experiences included taking histories, examining patients, doing minor operations, assisting surgeries, suturing and being involved in a diagnostic process as well as helping formulate management plans. Slightly more students who visited HIC were invited to undertake medical procedures, compared to LMIC, who were more likely to report "passive observation". However, among the students who were provided with the opportunity to undertake a medical procedure, the impact of the experience was profound.

"[I was] Involved in a wealth of different surgeries… Much to my delight, I was handed the suture and needle… learnt the art of the perfection in suturing" (LMIC, Nepal)

I acquired quite a bit of practice with practical procedures…[I had] the opportunity to assist [I was] interesting to see how operative techniques and procedures differed from those utilised back home (LMIC, Cook Islands).

Despite the obvious appreciation of clinical skill development indicated by the majority students, it

was the students who visited LMIC that were more likely to report an appreciation of the impact of poverty on healthcare and health and wellbeing more broadly. Poverty has an acute impact of the practice of medicine, a reality that is witnessed in terms of overcrowding, lack of privacy and increased medical complications.

Insights and Observations: Beyond the Clinic.

In LMIC students were often forced out of their comfort zone. Most students, while claiming to be adapTABLE, were still overwhelmed by some of their experiences.

Nothing I was told or could have done would have even half-prepared me of what I was to see. (LMIC, South Africa)

Pastoral care is a large part of the hospital services to the community… Surgeons pray before picking up the knife and physicians readily pause to pray for their patients (LMIC, Nepal).

The management of scarce resources was the most persistent and pervasive lesson for students in LMIC. In the HIC setting, learning leaned towards advanced medical technologies education aspect on being a competent doctor in a modern, well-resourced medical environment. Among the HIC students the elective experience gave them confidence in their clinical experience.

It is what I learn to master the art of medicine from history taking, formulating differential diagnoses, doing relevant clinical examinations and ordering and interpreting appropriate various diagnostic investigations to develop a clinical management plan. (HIC, Australia).

In LMIC, students were satisfied with "education that has patterned their thinking" (LMIC, Nepal), learning about "multi-factorial determinants of health and disease" (LMIC, Sri Lanka), becoming more competent (LMIC, Vietnam) and being part of a team in a supporting environment. The majority of students in LMIC reflected that their experience of working in a resource-poor setting will help them become, in short, a "better doctor."

Discussion

Our analysis of the medical students' overseas elective reports identified several pervasive perceptions about the value of this experience. Student motivations for country experience were driven by both an awareness of gaps in training and medical experience and, importantly, family or other social /personal need (including the need for adventure). Students who elected to visit a LMIC country were driven by an altruistic motivation, to gain insight into working in a resource-poor setting, the impact of social determinants of health (water, sanitation, housing on health) and to absorb the local culture and language. Students who opted to visit a HIC country were more likely to be enticed by the opportunity to experience new technologies, some of which may not be available in New Zealand due to our relatively small population size, therefore smaller demand. In addition, the perceived security of the country and the assurance of advancing knowledge in the course of the visit were also highly regarded, reflecting the "this is the one chance (to have access to this high quality setting)" thinking that underpinned student electives. Students who visited LMIC reported they had to cope with work in an "unstructured" environment, with less defined schedule, which may have contributed to overall less positive account of the experience compared with those visiting HIC. Students' expectations of the experience were associated with their reported level of opportunity to engage first hand in basic medical procedures. The reports from both LMIC and HIC did not question the ethics of working outside of one's skill area, rather this was widely appreciated as the reward of undertaking an elective and very much the result of "the luck of the draw" if you were fortunate to work in a setting that provided such opportunity. The extent to which students were engaged in medical practice outside of their skill set was not clearly determined but indicated in the reports. Crump and Sugarman's examination of the ethics of global health training in LMIC reiterate the need for clearer guidelines to be developed and applied (Crump and Sugarman 2010).

The medical elective is one of a range of opportunities offering students and medical practitioners the chance to experience working in low income settings. Crump and Sugarman appraise the practical and ethical implications of this endeavour, arguing for setting basic ethical guidelines (Crump and Sugarman 2010). Martiniuk and colleagues stress the importance of precise planning, implementation and reporting.(Martiniuk, Manouchehrain et al. 2012). Preparation is the key to any successful endeavour and the medical elective presents a sound case for

comprehensive preparation and follow-up programmes. There are numerous ways in which universities can prepare students for elective programmes.

Singh and colleagues argue in favour of providing undergraduate with training in the global health, in particular the principles of engagement, partnership and collaboration and capacity building – not just for the benefit of students, but the communities in which they are working. (Singh, McCool et al. 2012)[16]

One example was from Johns Hopkins University, where they hold 4-day global health education in the form of videoconference for medical students from Uganda, Ethiopia, Pakistan and India, supplemented by faculty lectures, small group discussions and optional activities (Goldner and Bollinger 2012). This is offered in their first year of medical school in part to encourage students to pursue opportunities in international electives (Goldner and Bollinger 2012). Additionally, pre-departure training can go further to explore students expectations, motivations and concerns on issues that may be ethically complex (Banatvala and Doyal 1998). Further to preparation courses, appropriate debriefing on return may add more benefit to the experience (Fox, Thompson et al. 2007). Another strategy to engage students is via global health case challenges as Emory University initiated (Ali, Grund et al. 2011). The competition requires students to be creative, within limited time constraints, while encouraging them to come up with innovative recommendations using various skills such as assessment of evidence, financial planning and ethical aspects (Ali, Grund et al. 2011). An alternative approach may formalise global health training in the medical programme, by including a specific global health modules, or similar within the first three years of training, followed up later with a dedicated pre-elective workshop. The Working Group on Ethics Guidelines for Global Health Training (WEIGHT) has also developed a set of guidelines for best practice in global health training experience (Crump and Sugarman 2010). It addressed the need for "structured programs, the goal of mutual and reciprocal benefit, the need to have adequate mentorship and supervision for trainees, preparation of trainees and trainee attitudes and behaviour"(Crump and Sugarman 2010).

The study included limited sample of student medical elective reports which were prepared for the purpose of reporting on the elective (rather than for research purposes per se). We also acknowledge the results reveal students experience of working abroad for a short period of time. Their observations and experience reflects both comparative international experience as well as the nuanced characteristics of the local settings. The study is therefore not representative of the entire collection of elective reports. However, it is noTABLE that out findings reflect the global trend towards equipping student with the knowledge and skills to engage their skills and practice as needed, to improve health outcomes among vulnerable populations.

Conclusions

Global health has never been more in demand among students of both medicine and public health and students are seeking the skills and in-country experiences that they see fitting the concept of global health, or practice in a globalised healthcare context. Others seek better understanding about the global drivers and responses to disease and disability. We observed that students visiting LMIC were exposed to the importance of maximising efficiency; while students exposed to healthcare in HIC settings valued what they considered to be avant-garde knowledge and skills. First-hand experience is highly valued among medical trainees as an effective tool for learning. The medical elective experience occupies a unique place in the highly contested New Zealand medical training curricula. Experiencing the diversity of healthcare practice, whether within the base setting or internationally, is an essential element for contemporary medical training; the overseas elective, although necessarily designed with building "global health" skills in mind, is one of the options to achieve this goal. We argue that more can be done to ensure the preparation and the six week period of overseas experience is the beginning of a career cognisant of the complex issues they will face as global citizens practicing medicine.

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